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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/666,553	09/21/2000	Yasuhiko Nomura	001222	7592

23850 7590 11/05/2002

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EXAMINER

LEUNG, QUYEN PHAN

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/666,553

Applicant(s)

NOMURA ET AL.

Examiner

Quyen P. Leung

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-- The MAILING DATE of this communication appears n the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

In response to applicant's amendment filed 8/5/02, claims 17-20 have been amended. Claims 1-20 are pending.

Response to Arguments

Applicant's arguments filed 8/5/02 have been fully considered but they are not persuasive. Applicant made the following arguments:

"Applicants note that Kondow et al. discloses a dielectric Bragg reflector comprising alternately stacked SiN and SiO layers. However, it does not appear to disclose the additional limitation of the dielectric film containing a nitride on the side of the interface between the dielectric film and the nitride-based semiconductor layer while containing an oxide on the side opposite to the nitride-based semiconductor layer."

"Furthermore, Kondow et al. does not disclose the limitation that the nitride film is formed on the surface of the nitride-based semiconductor layer, which claim language can only be anticipated by a reference that shows the nitride film formed **directly** on the surface of the nitride-based semiconductor layer."

In response to applicant's first argument, it is disagreed that Kondow does not teach the additional limitation, as stated above. First, attention is directed to applicant's figure 3, which shows a dielectric film 12B formed on a surface of a nitride-based semiconductor layer including an emission layer (7). Note that the dielectric film (12B)

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contains a nitride (112a or 112b) on the side of the interface between the dielectric film (12B) and the nitride-based semiconductor layer (including layer 7). Also the dielectric film (12B) contains an oxide (either 112b or 112c) on the side opposite to the nitride-based semiconductor layer (including layer 7). Similarly, since Kondow discloses a dielectric Bragg reflector (11) comprising alternately stacked SiN and SiO layers, there is at least one SiN layer that is positioned closer than at least one SiO layer to the nitride-based semiconductor layer.

In response to applicant's second argument above, it is disagreed that "directly" must be read into the claim and further it is disagreed that applicant is claiming that the nitride film is formed directly on the surface of the nitride-based semiconductor layer, because applicant has claimed a broader scope which does not require it. The claim requires that a dielectric film be formed on a surface of the nitride-based semiconductor layer. Kondow teaches this. The claim requires that the dielectric film contain a nitride *on the side* of the interface between the dielectric film and the nitride-based semiconductor layer. It does not require that the dielectric film containing a nitride directly at the interface, as argued by applicant.

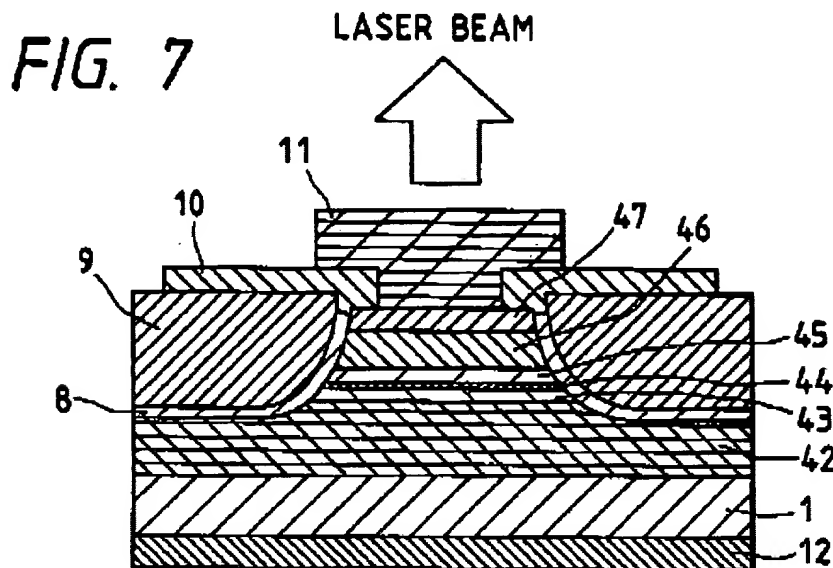
Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

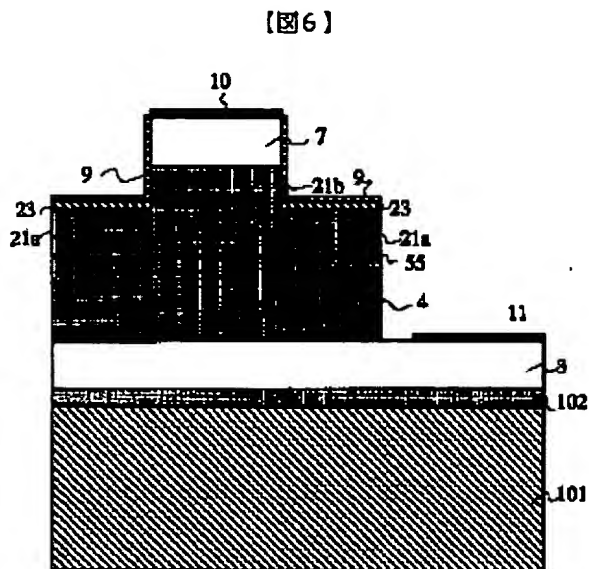
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kondow et al (5,912,913). Kondow et al discloses the claimed invention. Note figure 7 which



illustrates a nitride-based semiconductor laser comprising a dielectric film 11, the dielectric film 11 containing an oxide and a nitride (see col. 11 lines 57-63 and col. 7 lines 35-62).

3. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Inoguchi et al (JP 09-289358). Inoguchi et al discloses the claimed invention. Figure 6 illustrates the claimed invention. Note the dielectric layer 9 on the flat portion of the cladding layer 21a and the side surface of the ridge portion 21b.



Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondow et al (5,912,913) as applied to claims 1-10 above, and further in view of Shieh et al (5,838,705). Kondow et al has been discussed above except for a dielectric film containing nitrogen and oxygen instead of just oxygen. Shieh et al shows that a dielectric film containing nitrogen and oxygen (oxynitride) is an equivalent structure known in the art. See Shieh et al col. 4 lines 28-37. Therefore, because these two

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dielectric materials were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a dielectric film containing nitrogen and oxygen for that containing just oxygen.

6. Claims 1, 14-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoguchi (JP 09-289358) as applied to claim 17 above, and further in view of Shieh et al (5,838,705). Inoguchi has been discussed above except for a dielectric film 9 containing nitrogen and oxygen instead of just oxygen. Shieh et al shows that a dielectric film containing nitrogen and oxygen (oxynitride) is an equivalent structure known in the art. See Shieh et al col. 4 lines 28-37. Therefore, because these two dielectric materials were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a dielectric film containing nitrogen and oxygen for that containing just oxygen.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fujii (5,742,728) teaches a short wavelength laser emitting diode and Koga (5,727,008) teaches a semiconductor light emitting device.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

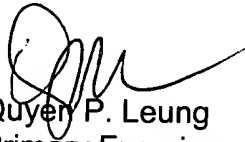
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (703) 308-0545. The examiner can normally be reached on 8:30-5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Quyen P. Leung
Primary Examiner
Art Unit 2828

QPL
November 4, 2002